

Claims:

Sub A3

1. A ball comprising an outer skin, the outer skin including a first layer which includes a syntactic material.

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2. A ball according to claim 1 wherein the syntactic material comprises a plurality of resilient spherical bodies dispersed in a matrix.

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3. A ball according to claim 1 wherein the syntactic material comprises a plurality of microspheres.

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4. A ball according to claim 3 wherein the syntactic material comprises a plurality of polymeric hollow microspheres.

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5. A ball according to claim 3 wherein the syntactic material comprises a plurality of acrylonitrile copolymer microspheres.

Sub A4

6. A ball according to claim 1 wherein the matrix material is selected from the group consisting of polyurethane, polyurethane foam, polyvinyl chloride, and latex.

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7. A ball according to claim 1 in which the outer skin further comprises a second layer (26) adjacent the first layer.

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8. A ball according to claim 7 wherein the second layer (26) comprises an aliphatic material.

9. A ball according to claim 7 further comprising a third layer (28) adjacent the first layer.

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10. A ball according to claim 9 wherein the third layer comprises at least one fabric backing material.

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11. A ball according to claim 1 wherein the matrix material is an adhesive.

12. A ball according to claim 1 further comprising a middle skin adjacent to the outer skin, a backing layer adjacent to the middle skin, and an inflatable bladder adjacent to the backing layer.

13. A ball comprising:  
an inflatable bladder;  
a first backing layer enclosing the inflatable bladder;  
a middle layer enclosing the backing layer;  
an outer skin enclosing the middle layer, the outer skin comprising;  
a second backing layer;  
a resilient layer enclosing the second backing layer and including a syntactic material, the syntactic material including polymeric microspheres dispersed in a polymeric matrix; and,  
a substantially opaque layer enclosing the resilient layer.

14. A ball according to claim 13 further comprising:  
a transparent layer enclosing the substantially opaque layer.

15. A ball according to claim 14 wherein the transparent layer includes an inner surface having a graphic imprinted thereon.

16. A ball according to claim 13 wherein the outer skin resilient layer polymeric matrix comprises a latex adhesive, and wherein the resilient layer is thereby bonded to the backing layer and the substantially opaque layer.

17. A method of manufacturing an outer covering material for a ball comprising the steps of:

- a. forming a first transparent layer atop the substrate;
- b. forming an image on the first transparent layer;
- c. forming a second layer over the first transparent layer and the image;
- d. forming a third layer over the second layer, the third layer comprising a syntactic material, the syntactic material including a plurality of hollow microspheres dispersed in a matrix; and
- e. adhering a backing layer to the third layer.

18. The method of claim 17 wherein the step of forming a first transparent layer comprises the steps of:

- a. providing a high-gloss release paper substrate;
- b. applying a layer of liquid polymeric material to the substrate; and
- c. curing the liquid polymeric material to form a cured, pliable, transparent first layer.

19. The method of claim 17 wherein the step of forming a second layer comprises the steps of:

- a. applying a layer of liquid polymeric material to the first transparent layer; and
- c. curing the liquid polymeric material to form a pliable second layer.

20. The method of claim 17 wherein the step of forming a third layer comprises the steps of:

- a. applying a layer of liquid syntactic material to the second layer, the liquid syntactic material comprising a plurality of resilient, hollow microspheres dispersed in a liquid polymeric material; and
- b. curing the liquid syntactic material to form a resilient third layer.

21. The method of claim 17 wherein the hollow microspheres are formed of acrylonitrile copolymer.

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22. The method of claim 17 wherein the hollow microspheres have an average diameter of between 10 and 100  $\mu\text{m}$ .

23. The method of claim 17 wherein the hollow microspheres have an average diameter of about 70  $\mu\text{m}$ .

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Add A6